PLANETARY PHENOMENA FOR MARCH AND APRIL, 1920

By Malcolm McNeill

PHASES OF THE MOON, PACIFIC TIME

Full Moon....	March 4,	1^h13^m P.M.	Full Moon.....	April 3,	2^h55^m A.M.
Last Quarter..	" 12,	9 57 A.M.	Last Quarter...	" 11,	5 24 A.M.
New Moon....	" 20,	2 56 A.M.	New Moon.....	" 18,	1 43 P.M.
First Quarter..	" 26,	10 45 P.M.	First Quarter...	" 25,	5 27 A.M.

The vernal equinox, the time when the Sun crosses the equator from south to north, occurs March 20, 2 P. M. Pacific Time.

Mercury on March 1st is an evening star, setting not quite an hour and a half after sunset. It reaches greatest east elongation on March 3rd. As it passed perihelion on February 29th, only four days before, the elongation, 18°12′, is much smaller than the average greatest elongation and its motion toward inferior conjunction is quite rapid. It reaches this point about midnight on March 19th. It will be easily visible in the evening twilight on March 1st, but its rapid approach to the Sun permits naked eye view for only a few days. After inferior conjunction it becomes a morning star and moves out toward greatest west elongation, reaching this point, 27°31′, on April 16th. This is much larger than the average, since the planet reaches its aphelion on April 13th. However, as the planet is 12° south of the Sun, it will rise less than an hour before sunrise and the conditions for visibility are not good. It is in conjunction with *Venus* on April 4th; but the planets are then too near the Sun for easy visibility altho possibly *Venus* may be seen on account of its superior brightness.

Venus is still a morning star, but the apparent distance from the Sun diminishes. On March 1st it rises a little less than an hour and a half before sunrise and during the two months' period this interval diminishes to about half an hour. The great brilliancy of the planet, however, will permit naked eye view thru nearly all this period. It is in conjunction with *Uranus* on March 20th, passing 0°21′ south of the latter.

Mars rises on March 1st at about 10:30 P. M. and on April 30th a few minutes before sunset. It reaches opposition with the Sun at 1 A. M. April 21st Pacific Time. The present period is the best for view of the planet since the last opposition, March, 1918. The present opposition is about an average one in point of distances from the Earth and Sun, and consequently the brilliance of the planet is better than the last two and not as good as the next two, especially the second following, which will correlate in August, 1924.

The planet will then be at nearly its least distance from both Sun and Earth. At the present opposition on April 21st the planet will be distant from the Earth about 54,000,000 miles. The time of least distance is about one week after opposition, but the variation in distance is too small to make any appreciable difference in its appearance. All thru the period the planet will be brighter than any of the fixed stars except *Sirius*, and will nearly reach that star's brightness for a few days near opposition. *Mars* is in *Libra*, and moves eastward about 1° up to March 14th; during the rest of the period it retrogrades, moves westward, about 12° and northward about 3° to about the boundary of *Libra* and *Virgo*.

Jupiter is in fine position for evening observation thruout March and April. On March 1st it is about three hours high at sunset and on April 30th it is already past the meridian. It does not set until nearly sunrise on March 1st, and on April 30th it remains above the horizon until after 1 A. M. It is in *Cancer* and retrogrades, moves westward, about 2° until April 3rd; it then resumes its eastward motion, making about 1° up to the end of the month. Thruout the two months it is very close to *Neptune*, coming to conjunction with the latter twice, the first time on March 12th when *Jupiter* is moving westward and the second time, April 19th, when it is moving eastward. At each conjunction *Neptune* is slightly less than 1° south of *Jupiter*.

Saturn is in the same general quarter of the sky as *Jupiter*, following after it somewhat more than an hour's motion. It passed opposition with the Sun on February 27th and was then above the horizon thruout the entire night. On April 1st it is about three hours high at sunset, and on April 30th it is about one hour east of the meridian at sunset. On the latter date it does not set until about half after two A. M. It is in *Leo* and retrogrades, moves westward, about 3°, and 1° northward during the two months, having nearly reached the limit of its westward motion at the end of April. As seen in the telescope the rings are narrower than they were during 1919, and by the end of the year they will look like a mere line. During the first part of the year they will widen a little until the minor axis is about 15 per cent of the major during April, but after that the diminution will be rapid.

Uranus passed conjunction with the Sun on February 21st, and became a morning star, but remains too close to the Sun for naked eye visibility during March and April.

Neptune passed opposition with the Sun at the end of January. Its proximity to *Jupiter* has been mentioned.